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EXAMINER	
MICHENER, JOSHUA J	

ART UNIT	PAPER NUMBER
3644	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/711,372	RICHARDSON, STEVEN D.	
	Examiner	Art Unit	
	JOSHUA J. MICHENER	3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-12,14-23,25 and 41-43* is/are pending in the application.

4a) Of the above claim(s) *14-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-12,18-23,25,41-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 19 - 21 are objected to because of the following informalities:

Claims 19 - 21 recite, "…the rotational speed of said via control of said at least one…" It appears to should be - - the rotational speed of said ***rotors*** via control of said at least one brake- - Appropriate correction is required.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 4, 6, 8, 10, 11, 12, 18 – 23, 25, 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bass et al. (US 6,789,764) in view of Vertatschitsch et al. (US 5,294,075), Karem (US 20020022909), Hadley et al. (GB 2213931) and Churchill et al. (US 5,352,090).

1. Regarding claims 4, 6, 8, 11, and 41-43, Bass et al. discloses a dual-flight tandem rotor wing (figures 1 and 2) comprising an aircraft fuselage (53); a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine (col 7, lines 10 -25); a plurality of rotors mechanically coupled to said plurality of hubs (col 7, lines 10 -25); and propelling and lifting said aircraft fuselage; a controller/(generic controls) adjusting rotational speed of a plurality of rotors (col 7, lines 10 -25), but fails to teach of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors; and the controller coupled to and adjusting rotation speed of said plurality of rotors in response to said rotor signals.

Hadley et al. discloses it is known to analyze and make calculations of rotor blades in regards to tracking and lag data (axial and tangential deflections) then take appropriate actions for corrective measures (page 1 line 15 – page 2, line 9) to reduce vibration, comprising an infrared detector directed towards rotors (1, 9, 10, 32, col 6, lines 7 – 15, col 8, lines 15 – 20, col 10, lines 1 – 10, figure 1) in response to emissive energy, plurality of emitters (12, 38, laser, reflector and col 7, lines 15 – 22) (teaches of variant alternative types of blade sensing systems with detectors, trackers, transponders, emitters, lasers, etc) all of which are obvious substitutable alternatives to for a sensing system wherein the system enables the track and lag of each blade to be measured thus the system measures the position of each blade (col 25, lines 3 – 14) without the need of a tachometer (col 25, lines 15 – 26). The Examiner asserts the system of Hadley measures both the vertical displacement and the rotational position of the blades.

Vertatschitsch discloses it is known to have multiple position sensors on the fuselage of an aircraft comprising a dual rotor system pointed towards the rotors and blades wherein the plurality of detectors (4 or 116); and a controller (8) coupled to said plurality of detectors (col 6, lines 14 – 20) controls the flight of the aircraft (col 3, lines 20 – 21), wherein the position measurements are obtained independently (col 3, lines 29 - 33) and wherein the positions of the rotors are tracked (col 3, lines 51 – 54), wherein the helicopter is controlled by a computer and completes flight control loops in a known matter (col 6, lines 65 - 66), wherein the controller coupled to said first and second detectors to receive said rotor signals, wherein said controller determines the relative rotational position of said first and second rotors as a function of said rotor signals (col 6, lines 54 – 59,position sensing and tracking), but fails to explicitly teach that the flight controller of the helicopter compares said relative rotational position of said first and

second rotors with a specified angular tolerance, and adjusts a rotational speed of said first rotor when said relative rotational position of said first and second rotors is outside said specified angular tolerance, but does not adjust the rotor speed if the rotor is within the specified angular tolerance.

Karem discloses it is known that an automatic flight control system in a helicopter controls rotor RPM during flight without mode of direct operator intervention (paragraph 0068).

Churchill discloses it is known that controlling the rotor RPM during flight is a means to control vibration of rotary wing aircraft (col 1, lines 30 - 39, col 3, lines 25 – 29) wherein reducing the RPMs will reduce the vibration.

Bass,Vertatschitsch, Karem, Churchill and Hadley ALL disclose various features known to rotary wing systems. The only difference is combining known systems and implementing known configurations for flight controllers to improve upon known systems.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass, to comprise an emitter/detector system of Hadley and have multiple detectors and emitters for a dual rotor system that is coupled to the flight controller as shown in Vertatschitsch to enable the flight control system to control the flight of the helicopter based on sensor readings of the rotary wing craft and the Examiner asserts one of ordinary skill would have recognized the importance of not only taking vertical displacement readings from the sensor system but also the rotational position of the rotor blades of Bass because Bass discloses a dual rotor aircraft (figure 1) wherein the rotors are NOT mechanically coupled together thus it would be possible for the blades to collide thus it would be of utmost importance to monitor and adjust the rotational position of the blades of either a first or second rotors, thus it would have

been obvious for one of ordinary skill in the art to configure the known flight controller to compare said relative rotational position of said first and second rotors with a specified angular tolerance and analyze the rotor data in order to take corrective measures wherein one of the corrective measure would be to adjust and control the RPMs of the rotors for automatic flight control as taught by Karem which would have the dual effect of preventing a collision but also reduce vibration that would be experienced by the rotors being out of track and/or balance.

Further, the Examiner asserts it is old and well known in the art that flight controllers and/or automatic pilot systems for helicopters controlling the flight of the helicopter, control the revolutions per minute (RPMs) of the rotors in variant flight maneuvers, modes, stability controls, fuel optimization, noise, etc., wherein given certain flight conditions sensed by sensors the flight controller would alter the RPMs of the rotors for purposes of compensating. Thus, it would have been obvious for one of ordinary skill in the art to have a flight controller change the RPMs of the rotors in order to control the flight of a helicopter given a variant flight condition experienced as sensed by the positional sensors, furthermore, it is known in the art that upon noticing a misalignment and/or out of track condition monitored by a rotor position sensing system, vibration of the craft is likely to occur and to compensate or prevent vibration or noise, one would adjust the rotational speed of the rotors for example for passenger comfort (see general state of the art to Church hill (vibration), Morrison, (fuel consumption), Brooks US5,584,661 (reducing rotor RPM reduces noise)).

2. Regarding claims 18 and 19, Bass et al., as modified, discloses the apparatus as in claim 3, wherein said controller adjusts gas flow to said plurality of rotors; at least one gas control

valve, said controller adjusting rotational speed of said plurality of rotors via said at least one gas control valve (column 3, line 35 – column 4, line 35),

3. Regarding claim 20, Bass et al., as modified, discloses the apparatus as in claim 3 comprising at least one air brake device (column 4, lines 35 – 40, Bass). It is noted, the Examiner is interpreting any control surface that produces drag as an airbrake and thus encompasses the scope of the claim.

4. Regarding claims 21 and 22, Bass et al., as modified, discloses the apparatus as in claim 3 comprising a drag device comprising a flap (column 4, lines 35 – 40, Bass) wherein the controller is capable of adjusting the flap.

5. Regarding claims 23 and 25, Bass et al., as modified, discloses the apparatus as in claim 3 wherein the controller switches said plurality of tandem rotor/wings between a vertical lift mode and a fixed wing mode (column 8, lines 30 – 43, Bass).

Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bass et al. (US 6,789,764) in view of Vertatschitsch et al. (US 5,294,075), Karem (US 20020022909), Hadley et al. (GB 2213931) and Churchill et al. (US 5,352,090) as applied to claims above, and further in view of Engels et al. (Us 5,205,710).

6. Regarding claims 7 and 9, Bass, as modified, discloses the apparatus as in claim 42 but fails to teach the detectors detect ultraviolet.

7. Engles et al. discloses an emitter for helicopter rotors that teaches of using infrared or ultra violent energy. It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank to use ultraviolet or infrared energy as an equivalent alternative energy source for lasers as a matter of design choice as taught by Engles (column 2,

line 20) to provide an virtually invisible light source for stealth at night. In other words, lasers are in variant areas of the spectrum.

8. **Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bass et al. (US 6,789,764) in view of Vertatschitsch et al. (US 5,294,075), Karem (US 20020022909), Hadley et al. (GB 2213931) and Churchill et al. (US 5,352,090) as applied to claims above, and further in view of Frank.**

9. Regarding claim 5, Bass, as modified, fails to teach the plurality of detectors are coupled to said plurality of rotors and directed towards said aircraft fuselage.

10. Frank, discloses a plurality of detectors are coupled to said plurality of rotors and directed towards said aircraft fuselage (figure 1 and 5).

It would have been obvious for one of ordinary skill in the art at the time the invention to arrange the detectors / emitters in any orientation as a matter of design choice as multiple arrangements are old and well known in the art, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Response to Amendment

The declaration under 37 CFR 1.132 filed 3/7/2008 is insufficient to overcome the rejection of claims 4-12, 18-23,25, 41-43 as set forth in the last Office action because: a new grounds of rejection has been set forth above, Applicant amended the claims thereby changing the scope, there is no nexus of applicant's arguments and the current claims, and it lacks factual support.

For rebuttal evidence to overcome a prima facie case of obviousness a nexus is required between the merits of the claimed invention and the evidence offered if that

evidence is to be given substantial weight in route to a conclusion on the obviousness issue (Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 305 n.42, 227 USPQ 657, 673-674 n. 42 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986)). The term "nexus" designates a factually and legally sufficient connection between the objective evidence of nonobviousness and the claimed invention so that the evidence is of probative value in the determination of nonobviousness. Demaco Corp. v. F. Von Langsdorff Licensing Ltd., 851 F.2d 1387, 7 USPQ2d 1222 (Fed. Cir.), cert. denied, 488 U.S. 956 (1988).

In the instant case, the probative value of the objective evidence provided was insufficient for a determination of obviousness because: (1) it lacked factual support, (2) and the expert opinion was from Applicant.

(1,3) Objective evidence which must be factually supported by an appropriate affidavit or declaration to be of probative value includes evidence of unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant. See, for example, In re De Blauwe, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984) ("It is well settled that unexpected results must be established by factual evidence." "[A]ppellants have not presented any experimental data showing that prior heat-shrinkable articles split. Due to the absence of tests comparing appellant's heat shrinkable articles with those of the closest prior art, we conclude that appellant's assertions of unexpected results constitute mere argument."). See also In re Lindner, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); Ex parte George, 21 USPQ2d 1058 (Bd. Pat. App. & Inter. 1991). (MPEP 716.01c)

In the instant case, the Examiner asserts the Bass et al. reference does not teach cross shafting.

(2) In assessing the probative value of an expert opinion, the examiner must consider the nature of the matter sought to be established, the strength of any opposing evidence, **the interest of the expert in the outcome of the case, and the presence or absence of factual support for the expert's opinion.** Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 USPQ 657 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986).

In the instant case, the expert is the Applicant and the interest of the Applicant is for a favorable consideration.

(3) The evidence relied upon should establish "that the differences in results are in fact unexpected and unobvious and of both statistical and practical significance." Ex parte Gelles, 22 USPQ2d 1318, 1319 (Bd. Pat. App. & Inter. 1992) (Mere conclusions in appellants' brief that the claimed polymer had an unexpectedly increased impact strength "are not entitled to the weight of conclusions accompanying the evidence, either in the specification or in a declaration."); Ex parte C, 27 USPQ2d 1492 (Bd. Pat. App. & Inter. 1992) (Applicant alleged unexpected results with regard to the claimed soybean plant, however there was no basis for judging the practical significance of data with regard to maturity date, flowering date, flower color, or height of the plant.). See also In re Nolan, 553 F.2d 1261, 1267, 193 USPQ 641, 645 (CCPA 1977) and In re Eli Lilly, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) as discussed in MPEP § 716.02(c).

In response to Applicant's declaration that all such aircraft (tandem dual rotor presumably) "… have cross-shafting that rigidly ties their rotations together…". This statement appears to be fundamentally inaccurate. Applicant should further examine previously cited prior art to Bass et al. and as taught, Bass discloses what appears to be 3 embodiments. Figure 1, does NOT teach of "rigid cross-shafting", but only discloses duct work. Figure 6 shows an alternative embodiment that teaches of "cross-shafting", but what appears to be of a not rigid nature in the sense that one rotor assembly is responsive to the other (col 6, lines 7 – 33) which would suggest to one of ordinary skill that the adjustment of the speed of one rotor assembly could be done independently of the second rotor assembly.

In response to Applicant's declaration in regards to Frank, this is found persuasive.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

In response to Applicant's argument that due to the "cross-shafting" neither Frank or Bass could adjust the speed of one rotor relative to the other, the Examiner respectfully disagrees. See discussion of Bass directly above. Further, AS CLAIMED, adjusting the speed of both rotors at the same time encompasses the scope of "adjusting one rotor" because if one adjust the speed of two rotors "one" of the rotors is also being adjusted, so irregardless of cross-shafting, slowing the RPMs of one or both rotors to reduce vibration as set forth above would meet the limitations as claimed.

In response to Applicant's argument that Engles teaches of a detecting sensor for crack detection not for position sensing, Applicant is reminded the rejection set forth above is one of

obvious type. Engles simply sets forth that alternative types of blade sensing devices exist (i.e. infrared or ultraviolet) and they are analogous to the rotor and helicopter art thus it would be obvious to one of ordinary skill to seek alternate types of sensors associated with helicopter blades, furthermore Frank and Hadley disclose alternative types of sensors also.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA J. MICHENER whose telephone number is (571)272-1467. The examiner can normally be reached on Monday through Friday 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on 571-272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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